FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

January 1 to 7, 2017 (Week 1)

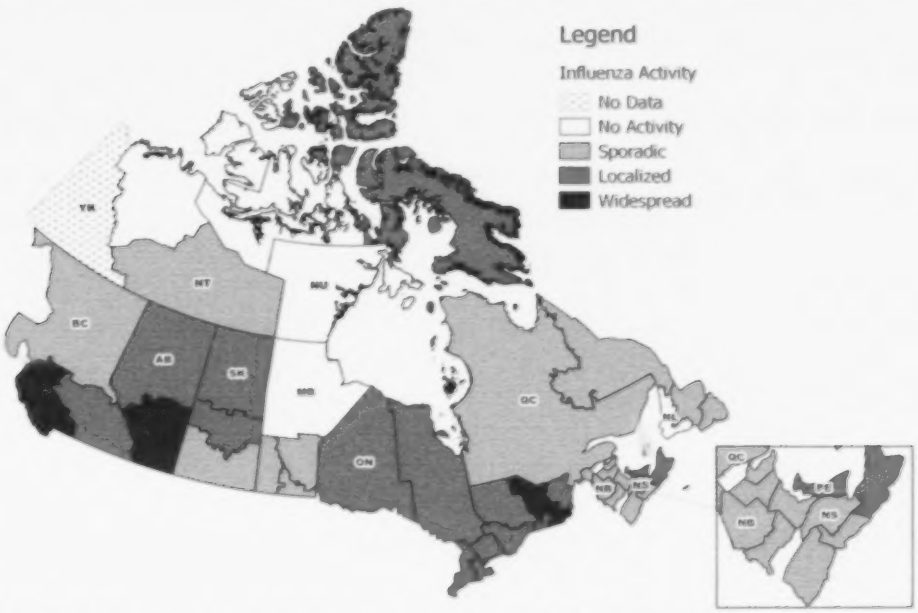
Overall Summary

- Overall, greater numbers of laboratory detections, outbreaks and hospitalizations were reported in week 1 compared to previous weeks suggesting that Canada is nearing peak influenza activity.
- A total of 2,639 positive influenza detections were reported in week 1, an increase from the previous week. Influenza A(H3N2) continues to be the most common subtype detected.
- One hundred and six confirmed influenza outbreaks were reported in week 1, with the majority occurring in long-term care facilities and due to influenza A(H3N2).
- The number of hospitalizations, ICU admissions and deaths reported by participating provinces and territories sharply increased from week 52 to week 1; the majority of hospitalizations and all deaths reported in week 1 were in adults.
- Influenza activity started early this season, but so far activity has been lower than the 2014-15 season when A(H3N2) was the predominant subtype.
- For more information on the flu, see our Flu(influenza) web page.

Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

In week 1, a total of six regions in Canada reported no influenza activity. Sporadic influenza activity was reported in 17 regions across eight provinces and territories. Localized activity was reported in 18 regions across nine provinces (PE, NS, ON, QC, MB, SK, AB, BC, and NU). Widespread activity was reported in eight regions (one region in QC,four regions in AB and three regions in BC). For more details on a specific region, click on the map.

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 1

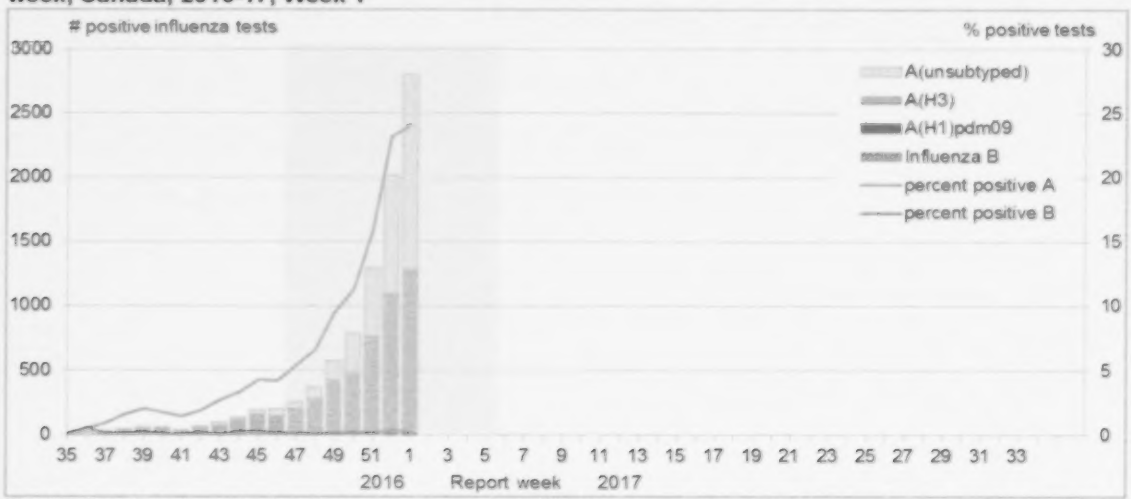


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

Laboratory Confirmed Influenza Detections

The percentage of tests positive for influenza increased from 23.5% in week 52 to 24% in week 1. Compared to the previous influenza A(H3N2)-predominant season in 2014-15, the percent positive in week 1 (24%) was lower than the percent positive reported in week 53 of the 2014-15 season (35%). For data on other respiratory virus detections, see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada (PHAC) website.

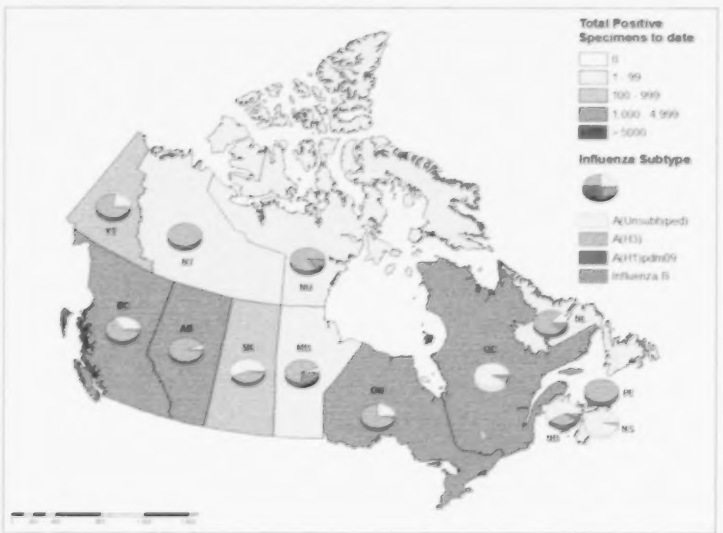
Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2016-17, Week 1



The shaded area indicates weeks where the positivity rate was at least 5% and a minimum of 15 positive tests were observed, signalling the period of seasonal influenza activity.

Nationally in week 01, 2,727 positive influenza tests were reported, up from 1,948 tests reported in week 52. To date, a total of 8,976 laboratory confirmed influenza detections have been reported. Influenza A(H3N2) is the most common subtype detected, representing 99% of subtyped influenza A detections (5015/5039). For more detailed weekly and cumulative influenza data, see the text descriptions for Figures 2 and 3 or the Respiratory Virus Detections in Canada Report.

Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province/territory, Canada, 2016-17, Week 1



To date this season, detailed information on age and type/subtype has been received for 6,879 laboratory confirmed influenza cases. Adults aged 65+ were the age group that accounted for the largest proportion of reported influenza cases (>45%) and the largest proportion of influenza A (H3N2) cases. Compared to the cases reported in the 2014-15 season at week 53, adults aged 65+ account for a smaller proportion of cases this season (approximately 45% in 2016-17 compared to 62% in 2014-15). Adults aged 45-64 account for a greater proportion of cases this season (approximately 46% in 2016-17 compared to 63% in 2014-15).

Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2016-17, Week 1

Age groups (years)	Weeks (Jan. 1 to Jan. 7, 2017)					Cumulative (Aug. 28, 2016 to Jan. 7, 2017)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	#	%
0-4	132	0	36	96	<5	>537	<5	262	275	36	>573	x%
5-19	60	0	23	37	<5	>750	<5	485	265	27	>777	x%
20-44	197	0	70	127	<5	1,127	5	698	424	24	1,151	15%
45-64	248	0	81	167	<5	1,163	8	663	492	20	1,183	22%
65+	877	0	182	695	8	>3,156	<5	1,495	1,661	33	>3,189	x%
Total	1,514	0	392	1,122	22	6,739	19	3,603	3,117	140	6,879	100%
Percentage[2]	99%	0%	26%	74%	1%	98%	0%	53%	46%	2%		

[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Cumulative data include updates to previous weeks.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
x: Supressed to prevent residual disclosure
Specimens from NT, YT, and NU are sent to reference laboratories in the provinces

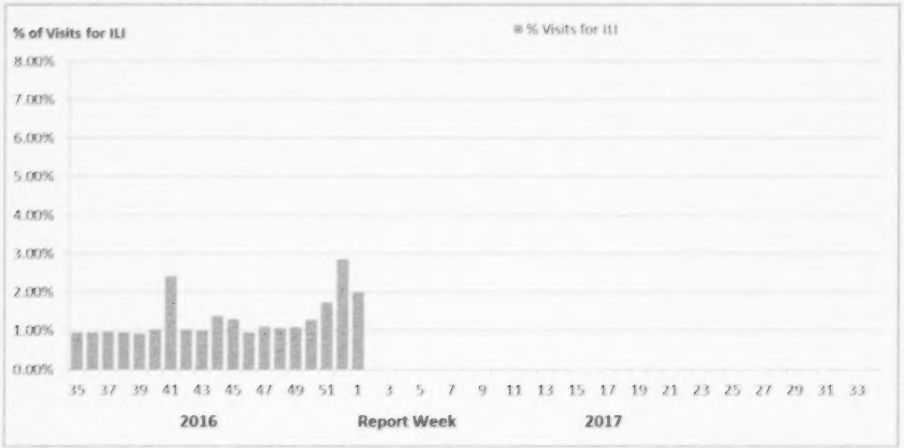
Syndromic/Influenza-like Illness Surveillance

Healthcare Professionals Sentinel Syndromic Surveillance

In week 1, 2.0% of visits to healthcare professionals were due to ILI, down from week 52 where 2.8% of visits were due to ILI.

Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, 2016-17

Number of Sentinels Reporting Week 1: 95



Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

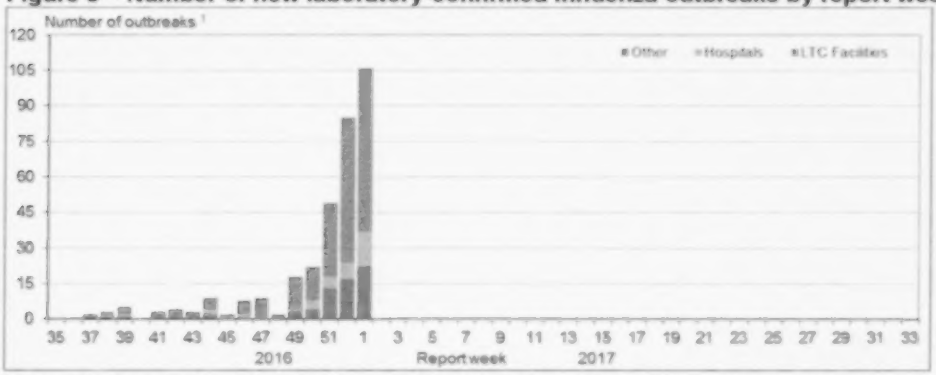
Are you a primary healthcare practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel? Please visit our Influenza Sentinel page for more details.

Influenza Outbreak Surveillance

In week 01, 106 laboratory confirmed influenza outbreaks were reported: 69 in long-term care (LTC) facilities, 15 in hospitals and 22 in institutional or community settings. Of the outbreaks with known strains or subtypes: 105 outbreaks were due to influenza A of which 24 were due to influenza A(H3N2) (four in hospitals, 11 in LTC facilities and nine in institutional or community settings), 81 were due to influenza A(UnS) (nine in hospitals, 51 in LTC facilities and 21 in institutional or community settings). One outbreak was due to influenza B.

To date this season, 333 outbreaks have been reported and the majority (68%) have occurred in LTC facilities. In comparison at week 53 in the 2014-15 season, the previous influenza A(H3N2)-predominant season, 623 outbreaks were reported, of which 74% occurred in LTC facilities.

Figure 5 – Number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2016-17, Week 1



[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions.Outbreak definitions are included at the end of this report.

Provincial/Territorial Influenza Hospitalizations and Deaths

In week 1, 445 influenza-associated hospitalizations were reported by participating provinces and territories*. Influenza A accounted for all but three of the reported hospitalizations. A total of 15 ICU admissions and 13 deaths were reported in week 1. Adults aged 65+ accounted for the largest proportion of hospitalizations (75%). All deaths in week 1 were reported in adults.

To date this season, 1436 hospitalizations have been reported, of which 99% were due to influenza A. Among cases for which the subtype of influenza A was reported, almost all (858/861) were influenza A(H3N2). Adults 65+ accounted for approximately 69% of the hospitalizations. Sixty intensive care unit (ICU) admissions and 36 deaths have been reported. The majority of deaths (78%) were reported in adults aged 65+ years.

Table 2 – Cumulative number of hospitalizations, ICU admissions and deaths by age and influenza type reported by participating provinces and territories, Canada, 2016-17, Week 1

Age Groups (years)	Cumulative (Aug. 28, 2016 to Jan. 7, 2017)						
	Hospitalizations			ICU Admissions		Deaths	
	Influenza A Total	Influenza B Total	Total [# (%)]	Influenza A and B Total	%	Influenza A and B Total	%
0-4	95	5	100 (7%)	<5	x%	0	0%
5-19	66	<5	>66 (x%)	<5	x%	<5	x%
20-44	78	<5	>78 (x%)	<5	x%	0	0%
45-64	187	<5	>187 (x%)	20	33%	7	x%
65+	990	7	997 (69%)	28	47%	28	x%
Total	1416	20	1436 (100%)	60	100%	>35	100%

x: Supressed to prevent residual disclosure

*Note: Influenza-associated hospitalizations are not reported to PHAC by BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not distinguished among hospital admissions reported from ON. The hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

Sentinel Hospital Influenza Surveillance

Pediatric Influenza Hospitalizations and Deaths

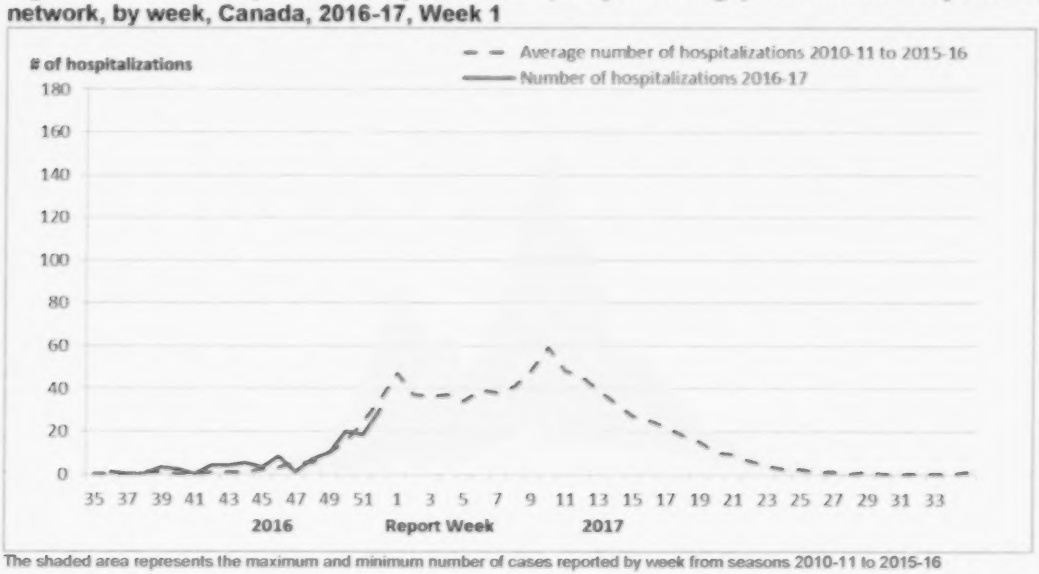
In week 01, a total of 46 laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network. All but one case was due to influenza A. The number of hospitalizations reported in week 1 is comparable to the number of hospitalizations reported for week 01 in the previous six seasons.

To date this season, 171 laboratory-confirmed influenza-associated pediatric hospitalizations were reported by the IMPACT network. Children aged 0-2 years accounted for approximately 41% of hospitalizations. Influenza A accounted for 92% (n=157) of the reported hospitalizations, of which 48% (n=75) were influenza A(H3N2) and the remainder were A(UnS). Additionally, 26 intensive care unit (ICU) admissions have been reported, of which the largest proportion (31%) was reported in children 10-16 years. No deaths have been reported this season.

Compared to 2014-15, the previous influenza A(H3N2)-predominant season, where 358 hospitalizations were reported as of week 53, there has been approximately half the number of cases reported to date in the current season.

Figure 6 – Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza by age-group reported by the IMPACT network, Canada, 2016-17, Week 1

Figure 7 – Number of pediatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, by week, Canada, 2016-17, Week 1



The shaded area represents the maximum and minimum number of cases reported by week from seasons 2010-11 to 2015-16

The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated pediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths

In week 1, a total of 171 laboratory-confirmed influenza-associated adult (≥20 years of age) hospitalizations were reported by the Canadian Immunization Research Network (CIRN). All but one case was due to influenza A and the greatest proportion of cases (82%) occurred in adults aged 65+.

To date this season, 375 laboratory-confirmed influenza-associated adult (≥20 years of age) hospitalizations have been reported by CIRN. All but three hospitalized cases were due to influenza A. Adults aged 65+ accounted for 75% of hospitalizations. To date, greater than eighteen ICU admissions and seven deaths have been reported.

Figure 8 - Cumulative numbers of adult hospitalizations (≥20 years of age) with influenza by type and age-group reported by CIRN, Canada, 2016-17, Week 1

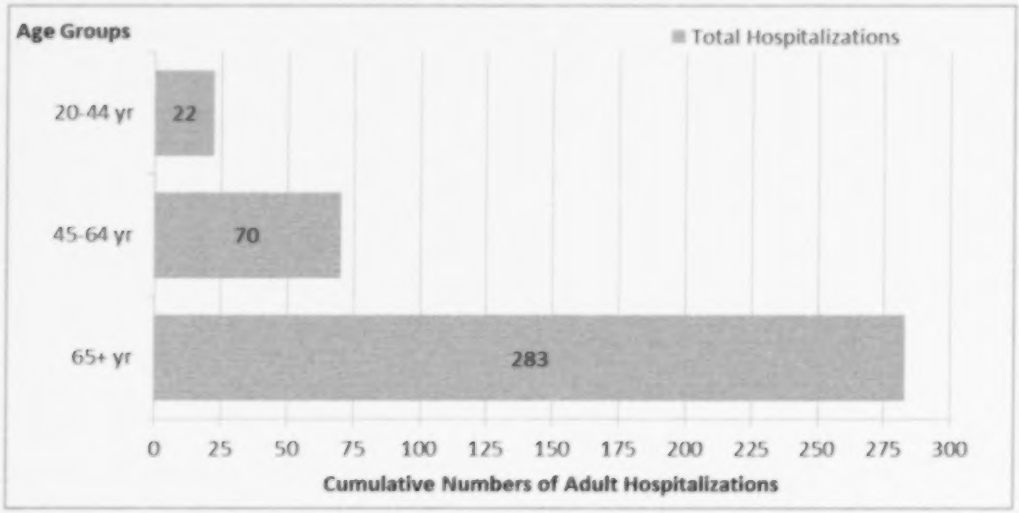
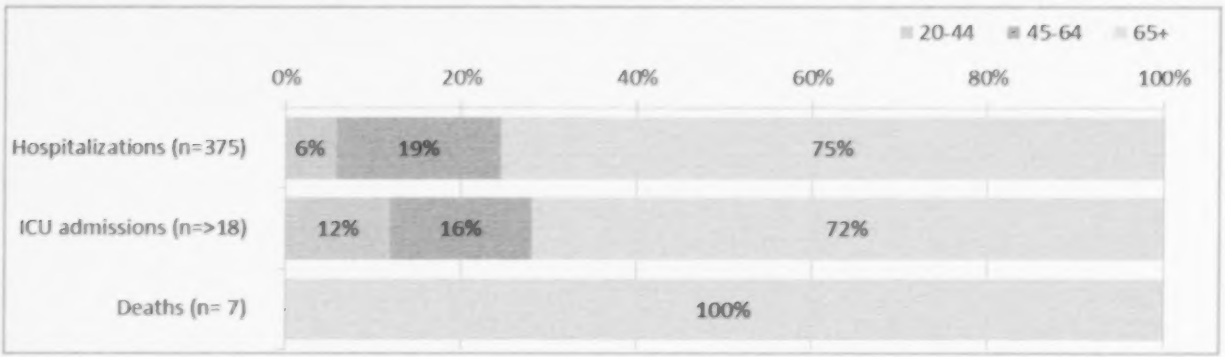


Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group (≥20 years of age) reported by CIRN, Canada 2016-17, Week 1



The number of hospitalizations reported through CIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Influenza Strain Characterizations

During the 2016-17 influenza season, the National Microbiology Laboratory (NML) has characterized 217 influenza viruses [189 A(H3N2), 10 A(H1N1), 18 influenza B]. All but one influenza A virus (n=198) and nine influenza B viruses characterized were antigentically or genetically similar to the vaccine strains included in both the trivalent and quadrivalent vaccines. Nine influenza B viruses were similar to the strain which is included only in the quadirvalent vaccine.

Table 3 – Influenza strain characterizations, Canada, 2016-17, Week 1

Strain Characterization Results[1]	Count	Description
Influenza A (H3N2)		
Antigenically A/Hong Kong/4801/2014-like	68	Viruses antigenically similar to A/Hong Kong/4801/2014, the A(H3N2) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent vaccine.
Genetically[2] A/Hong Kong/4801/2014-like	120	Viruses belonging to genetic group 3C.2a. A/Hong Kong/4801/2014-like virus belongs to genetic group 3C.2a and is the influenza A(H3N2) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent vaccine. Additionally, genetic characterization of the 68 influenza A (H3N2) viruses that underwent HI testing determined that 53 viruses belonged to genetic group 3C.2a and 15 viruses belonged to genetic group 3C.3a. Sequencing is pending for the remaining four isolates.The majority of viruses belonging to genetic group 3C.3a are inhibited by antisera raised against A/Hong Kong/4801/2014[3].
Antigenically A/Indiana/10/2011-like[4]	1	Viruses antigenically similar to A/Indiana/10/2011, a candidate H3N2v vaccine virus.
Influenza A (H1N1)		
A/California/7/2009-like	10	Viruses antigenically similar to A/California/7/2009, the A(H1N1) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent influenza vaccine.
Influenza B		
B/Brisbane/60/2008-like (Victoria lineage)	9	Viruses antigenically similar to B/Brisbane/60/2008, the influenza B component of the 2016-17 Northern Hemisphere's **trivalent** and **quadrivalent** influenza vaccine.
B/Phuket/3073/2013-like (Yamagata lineage)	9	Viruses antigenically similar to B/Phuket/3073/2013, the additional influenza B component of the 2016-17 Northern Hemisphere **quadrivalent** influenza vaccine.

[1] The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Strain characterization data reflect the results of hemagglutination inhibition (HI) testing compared to the reference influenza strains recommended by WHO.
[2] Determined by sequence analysis.
[3] WHO - Recommended composition of the influenza virus vaccines for use in the 2016-17 northern hemisphere influenza season.
[4] Detected in epidemiological week 50. For more details, see Week 50 report.

Antiviral Resistance

During the 2016-17 season, the National Microbiology Laboratory (NML) has tested 224 influenza viruses for resistance to oseltamivir and zanamivir and 116 influenza viruses for resistance to amantadine. All viruses were sensitive to oseltamivir and zanamivir. All 116 influenza A viruses were resistant to amantadine (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2016-17, Week 1

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	196	0 (0%)	196	0 (0%)	109	109 (100%)
A (H3N2v)	1	0 (0%)	1	0 (0%)	1	1 (100%)
A (H1N1)	9	0 (0%)	9	0 (0%)	6	6 (100%)
B	18	0 (0%)	18	0 (0%)	NA[1]	NA[1]
TOTAL	224	0 (0%)	224	0 (0%)	116	116 (100%)

[1]NA: Not Applicable

Provincial and International Influenza Reports

- World Health Organization influenza update
- World Health Organization FluNet
- WHO Influenza at the human-animal interface
- Centers for Disease Control and Prevention seasonal influenza report
- European Centre for Disease Prevention and Control - epidemiological data
- South Africa Influenza surveillance report
- New Zealand Public Health Surveillance
- Australia Influenza Report
- Pan-American Health Organization Influenza Situation Report
- Alberta Health – Influenza Surveillance Report
- BC - Centre for Disease Control (BCCDC) - Influenza Surveillance
- New Brunswick – Influenza Surveillance Reports
- Newfoundland and Labrador – Surveillance and Disease Reports
- Nova Scotia - Flu Information
- Public Health Ontario – Ontario Respiratory Pathogen Bulletin
- Quebec - Système de surveillance de la grippe
- Manitoba – Epidemiology and Surveillance – Influenza Reports
- Saskatchewan – influenza Reports
- PEI – Influenza Summary

FluWatch Definitions for the 2016-2017 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.
Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.
Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported
2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†
3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†
4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.
** More than just sporadic as determined by the provincial/territorial epidemiologist.*
† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.
This report is available on the Government of Canada Influenza webpage. Ce rapport est disponible dans les deux langues officielles.